CURRENT INTERNATIONAL AND DOMESTIC STATUS OF ONLINE DELIVERY IN POST-SECONDARY EDUCATION

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EXECUTIVE SUMMARY

While the application of information and communication technologies (ICT) within post secondary institutions has been quite extensive in institutional functions such as administration and development of instructional materials, the application of these technologies to the delivery of courses is in the early stages. The application of ICT to the provision of learner support service is even less advanced.

The development of online delivery has evolved from the early forms of distance education (correspondence courses), through the use of one-way broadcast and point-to-multi-point technologies, and on to the capability of today's technology that enables asynchronous inter-activity and information access online. Throughout this process innovative educators have been involved in assessing technology to determine how it might enhance the delivery of instruction. However, the focus has been on applications that enable distance learners to interact with one another and with their instructor rather than on the delivery of content.

The benefits, disadvantages and obstacles that educators are encountering in this evolving process are the focus of this discussion paper.

A Global Perspective

Forces of change

The development of online post secondary education, like any other process of change, is the result of forces that foster change to the status quo, and others work to keep things as they are.

For example, many institutions perceive that by using online delivery they can maintain or increase their market share as well as contain costs. They also believe revenue can generated from the export of selected programs to support campus-based activities. Others believe that online delivery will enhance the quality of on-campus learning. Corporations influence these perceptions through their use of online delivery to provide training for widely dispersed

staff. However, the most powerful forces for change result from the increasing capacity of ICT to enhance the teaching/learning process and to enable institutions to "unbundle" functions which traditionally were all performed intra-institutionally.

A wide variety of forces constrain the development of online delivery. For example, current technology does not provide sufficient bandwidth to enable true multimedia instruction online. Access to the technology is not available to many of the world's learners and putting it in place is very costly. Faculty are reticent about the use of online delivery for reasons that range from concerns about academic quality to their changing role. Learners also wonder if the quality of their education will suffer, if support will be available and if the credits they earn will get acknowledged. Another constraining force is the traditional consultative and bicameral decision making processes found in institutions of higher education. Gaining the consensus necessary for change takes time.

General observations

The interplay of the forces described above makes the development of online education extremely dynamic. For example:

- There is a confusing array of descriptors and definitions for online education. The fact is that there are still very few examples where synchronous or asynchronous digital networks are being used as the primary means to deliver courses, even though many courses are described as "being online".
- The agenda concerning the adoption of online delivery methods has broadened over the last few years. In addition to concerns related to the technology, it now includes such matters as educational quality, institutional autonomy, copyright issues, learner support, faculty workload and compensation criteria. This increased complexity of the change agenda makes it more difficult for institutional leaders to hurry the adoption process.

- Technology applications that faculty and staff perceive as supporting their current activities are adopted much more readily than those they believe will be disruptive. In other words, if online learning is seen to add to existing workloads, threaten educational quality or draw resources away from current activities, adoption will be resisted. Conversely, technological applications that are seen to have the reverse effect are more likely to be embraced.
- Distance education is increasingly a euphemism for online delivery. As a result, distance education, once on the fringe of institutional interest, is rapidly moving to center stage and, in the process, bringing about a convergence of the once separate worlds of face-to-face instruction and distance learning.
- New organizational forms are emerging. Private sector organizations are appearing in response to the emerging sense of business opportunities in online education and training. Organizations that do not actually provide instruction but specialize in some aspect of support services are developing as a result of the unbundling of institutional functions. The development of global consortia of institutions, intent on collaborating to market their programs to learners anywhere, have emerged more recently.
- These developments are resulting in a very fragmented and competitive education marketplace. The content areas that are seen to be potentially profitable in terms of online learning are those related to business, technology, professional up-grading and non-formal, general interest topics.
- There are major disparities in terms of student access to ICT appliances and infrastructure. It simply doesn't exist in much of the world. For others, it is not affordable. The tremendous growth of tele-centers, or community learning centers, is an attempt to alleviate these problems.
- Governments are playing an important catalytic role in the process of educational reform as it relates to the use of ICT.

The Canadian Perspective

Canadian post secondary education is impacted by the same change forces that exist in other countries with well developed ICT infrastructure; however, the effect of these forces is modified somewhat in Canada by the different roles of the provincial and federal governments.

Nevertheless, Canada has been, and continues to be, at the forefront in the use of technology to provide access to learning opportunities. As a result, the current Canadian examples of online delivery are as imaginative and innovative as they are anywhere. Less evident are Canadian-based national and international initiatives to provide online delivery on a large-scale. A more detailed analysis follows:

Strengths

Canadian post secondary education is highly respected internationally as is the expertise of Canadian educators and the private sector in using ICT. There is also a large inventory of instructional materials in distance education that could be converted for online delivery.

Weaknesses

Canadian institutions have less experience in working with partnerships, particularly those involving business, than is the case in the U.S. or the U.K. Also, Canadian institutions do not have access to large pools of capital as do their U.S. counterparts. And the Canadian market is relatively small, making it less attractive to investors even if the investment mechanisms were in place. Institutions tend not to think of online delivery as being applicable to campus-based programs, which limits the opportunity to achieve economies of scale. And distance education applications are limited by provincial "turf-guarding".

Threats

The number of out-of-province and out-of-country course and program providers using online delivery methods is increasing rapidly. This will

increase as the programs provided by the newly-formed international consortia come on stream. Failure on the part of institutions to make changes in a timely manner will invite the creation of new organizations that will respond to needs and opportunities resulting from the growth of online education..

Opportunities

Canada has a major asset in the inventory of distance learning material that exists in post secondary institutions. This could be leveraged to create a national database of "content objects" and a national virtual institution to deliver it online – anywhere! The development of online learner support services such as prior learning assessment, program planning and student learning records would compliment this initiative.

Also, the application of online delivery in the context of both on and off-campus teaching has barely been explored.

The Issues of Implementation

The issues associated with the use of online delivery concern learners, faculty and institutions as well as inter-institutional relationships. Therefore perceptions about the benefits, disadvantages and obstacles involved vary depending on the perspective – as does the reaction to efforts to accelerate the use of online delivery.

The learners

While learners are diverse, and the context for online learning is therefore variable, there are potentially several benefits.

- It expands their access to information.
- It enables their learning to be more active, collaborative and self-directed.
- It develops applied skills in areas of techno-literacy, information management and online collaboration.

The primary concerns learners have are with technology that doesn't work, insufficient instructor feedback and unclear administrative procedures. Nevertheless, the evidence is that online learning is as effective as any other instructional mode – including face-to-face teaching.

The faculty

Online delivery requires them to change from an information provider to a facilitator of learning. Faculty need to be coached and supported in making these changes. Other concerns involve increased workload, intellectual property rights and the public nature of online delivery.

Institutions

Leaders need to achieve three, often conflicting, objectives: increase access; increase quality; and reduce or contain expenditures. To reach these objectives they must link larger numbers of students, scholars and resources together in a richer, more effective learning environment. Institutional issues arise from this context, logically beginning with a need to determine the importance of online education to the institution. The questions of what technologies to purchase and how to finance the investment are challenging, particularly because the reallocation of resources is difficult in post secondary institutions.
Other challenges concern the provision of learner support and decisions about involvement in partnerships.

Inter-institutional relationships

These are marked by an increasing need for collaboration in order to:

- Provide "one-stop shopping" for learners.
- Share development costs.
- Deal with credit transfer issues.
- Agree on competency standards for common program areas.

Addressing these needs is complicated by a history of competitiveness and institutional autonomy.

Developing Trends

Current applications of online delivery are focused on making existing curricula more accessible. Some of the trends that will impact on that, and create new online learning environments, are:

- The evolution of "standards-based learning systems" that allow content to be defined in small objects with associated learning resources, activities and assessment strategies which can then be shared among institutions that adhere to similar technical standards.
- Associated with the above is the development of content standards as a means of quality assurance.
- The development of learning centers to provide access to connectivity and technology appliances to ensure equity of access to online learning.
- The evolution of new organizations that specialize in providing key functions such as development of instructional materials, and provision of technical delivery systems, learning assessment, credit banking and learner support services.

As a final comment, it must be remembered that technology is an educational means, not an end. Its application can be viewed as a continuum: at one end technology assists the teacher in the classroom and at the other teachers facilitate learning that is delivered primarily online to learners anywhere.

INTRODUCTION

Definition and Perspective

Online education is generally understood to be the use of digital networks, either synchronous or asynchronous, for the delivery and tuition of courses. But this definition limits the perspective of online education and describes just one of the core functions that occur in the process of providing educational opportunities. Other important components are:

- The effect on administrative requirements such as registration, records, fees, etc.
- The development, production, and distribution of instructional materials.
- The provision of learner support services such as career counselling, advising, prior learning assessment, program planning and access to information resources.

There are two reasons for keeping this broader perspective in mind. First, productivity, efficiency, and quality of all these core functions can be enhanced through appropriate applications of information and communication technologies (ICT). Indeed, those activities related to administration and instructional materials development have benefited from ICT for some time, while the application of ICT to the delivery and tuition of courses is much more recent. And ICT application to enhance learner support services is just beginning.

The second reason for maintaining a broad perspective is the growing need for interoperability. Because ICT has not had a significant impact on the function

of course delivery and tuition, applications in other areas have proceeded in an environment of relative independence. However, as is discussed later in this paper, the digital network delivery applications and content standards that are emerging require interoperability across all functions.

Evolution and Convergence

The roots of online education are deep in the practice of distance education. A recent report from the American Council on Education (ACE) states:

> The new distance education force transforming higher education may not be controlled by the traditional structures or providers of education or by traditional academic policies. Not only do the new forms of education portend a change for student populations, but also they will force faculty to develop new modalities of teaching and administrators to provide a new infrastructure for support. As a result, the advent of distance education is forcing many institutions to review and amend many of their existing policies and procedures.[1]

Tapsall and Ryan,[2] writing from an Australian perspective, describe the evolution of delivery modes in terms of three phases: distance education, open learning, and flexible learning.

They argue that the first phase, distance education, emerged in response to the issues of geographical distance of learners from institutions and because personal commitments and responsibilities precluded regular campus-based attendance. The second phase, open learning, while also responding to the problems of distance, is primarily focussed on meeting the needs of those who are disadvantaged in terms of entry qualifications and, therefore, need to be served through "second chance" enrolment policies and alternative programs and delivery models.

Finally, they argue that the third phase, flexible learning, in the context of Australian universities, is less about distance or disadvantage than about providing "more" education to "more" students (anywhere, anytime) at "less" cost. Flexible delivery modes, using CD-ROMs and the Internet, are being used as much as a solution to on-campus problems as they are to off-campus access. Tapsall and Ryan claim that, as a result, face-to-face and distance and open learning modes are converging. Students in all types of venues are increasingly learning through the use of the same technologies.

Peter Dirr[3] offers yet another view of the evolution of ICT applications in higher education. As he sees it, the process has been characterized by two features. One is that the technology application decisions have been driven primarily by technology, not by consumers. The other is that the applications have been made to a traditional academic paradigm. He points to the widespread use of video conferencing, which has enabled instructors to retain much of the old pedagogical method and has done little to accommodate the learner's need for flexibility. Dirr argues that institutions have failed to employ the full power of newer technologies and have not taken full advantage of the resources available to both learners and instructors.

Stephen Ehrmann looks at the way technology applications have developed:

> Many institutions are searching for a unifying vision to guide their investments in teaching, learning, and technology. Some of them hear a thundering herd of innovations collectively referred to as *distance education* and *learning anytime anywhere for anyone* and are wondering if their campuses even have a future.[4]

Ehrmann contrasts the concept of the *campus-bound* paradigm with the *campus-based* paradigm. The former assumes that the quality of a program depends entirely on the books, laboratories, faculty members, students, etc.

that are on-site. But the latter, which he calls the new paradigm, assumes that some of the resources and some of the learning are off-site. Networks enable staff and students to use a worldwide web of academic resources and, in the process, may only be on campus part of the time.

Bill Wiggenhorn,[5] president of Motorola University, when asked for a state-of-the-art definition for distance learning, called it *e-learning* which he said supports e-commerce, e-business, and e-citizenry. He said that the goal at Motorola is not just to use it to be more flexible or to reduce costs, but also to enable people to acquire the technology skills that are becoming essential in all aspects of life.

Others believe another phase of this evolution is underway with the use of distributed learning techniques and content databases that can reused and repurposed. David Porter[6] states that available and emerging technologies are enabling an *on-demand* model of online learning that will allow learners to be more self-directed and provide a rich resource for teachers and instructors.

GLOBAL OVERVIEW

The development of online post-secondary education is occurring in the context of forces that, on one hand, speed up the change process and, on the other, constrain it. These forces range from the regionally specific to the globally pervasive. The relative importance of any of them depends on the socio-economic realities in a given state or nation. The following examples are, therefore, illustrative. They are drawn from a recent report[7] on the state of development of virtual education around the world.

Driving Forces

1. The primary force of change is the remarkable increase in the applicability of ICT to all educational functions, particularly those relating to the delivery and tuition of courses, seminars, and workshops. The capacity of

these technologies to enable inter-activity, increase flexibility, and to foster collaborative learning strategies makes them much more appealing to educators and reduces the longstanding criticism that technology isolates learners and does not allow the development of a "learning community." This development is particularly significant for those institutions that have been delivering distance learning courses and programs over the years. These features, together with continuing decreases in the cost of appliances, are at the heart of the current educational reform processes underway around the world.

2. The application of ICT to the various educational functions, such as administrative tasks, allows them to be more easily "unbundled."[8] Historically, institutions of higher education have carried out these functions entirely in-house. But now, with the use of ICT, some of them can be carried out by other organizations through various forms of "value-added" partnerships or contract arrangements. Under such an arrangement, institutions can focus on those functions they consider to be their "core business," that is, delivering quality education.
3. The corporate sector is often cited as the leader in providing state-of-the-art ICT educational applications. Many corporations have recognized the benefits of using interactive technologies to provide training for widely distributed staff. Not only can "just-in-time" training be provided, but travel costs can be significantly reduced. For the corporate world, ICT makes good business sense, and so it has adopted online educational delivery strategies more quickly than educational institutions. But, in turn, the educational world has reacted to the "demonstration effect" from the corporate world and been driven to change, particularly in academic areas as such business, technology, and professional education.
4. Post-secondary institutions in the United States, the United Kingdom, Canada, and Australia have, historically, been major providers of educational opportunities for students from developing countries. In many cases, their enrolment has provided an important revenue stream for those

institutions. The advent of online education is seen as a potential threat to that situation and it is made more real by the growing concerns in the developing countries over the cost of sending students abroad. Those countries still want their students to have access to the programs, but they want more of the programs to be delivered in their own countries. Therefore, to protect market share, institutions, sometimes with government help, are exploring delivery models that will both accommodate the needs of developing nations while staying competitive in the global marketplace.[9]

5. Universities and colleges recognize the opportunity to enhance the quality and relevance of campus-based education by developing online programs. They realize the value of encouraging students to access information from multiple sources, which develops their information search and management skills as well as their competencies in using ICT appliances.
6. Traditional institutions are also motivated to embrace online learning in order to save money. It's believed that they can save money by the more efficient delivery of programs and higher productivity from faculty. This potential money-saving is obviously attractive in a climate of dwindling government grants.
7. Of equal import is the perception that there is money to be made by exporting programs through online delivery, which can then be used to shore up flagging budgets to support the traditional on-campus activities.

Taken together, these driving forces constitute a powerful influence on the thinking of the leadership of post-secondary institutions. Those leaders feel that, in order to maintain their image with students, alumni, donors, and peers, they must develop online delivery. And they worry that, if they don't, their institution may disappear in a future marked by ICT applications.

Constraining Forces

1. Although the development of technology was previously cited as a driving force, it also serves to constrain the development of online education. Currently, there are certain pedagogical limitations in the use of technology. For example, the lack of bandwidth restricts the type of instructional material that can be used. While this constraint is lessening rapidly, it is the reason why true multi-media instruction has been restricted to the use of CD-ROM technology. Further, there are huge regional disparities in the access to technological infrastructure and appliances. For most students in the developing world, there simply is no access to network connectivity. And even when the connectivity is a possibility, there is no access to the appliances needed to use it. Indeed, the inequities of access to ICT, both globally and nationally, cause educators and policy-makers to worry that more ICT applications in education will exacerbate the differences between socio-economic groupings.
2. The technical infrastructure needed to support the emerging models of online learning requires substantial investment. The competing demands to maintain existing infrastructure and traditional core processes make it difficult for administrators to defend a decision to spend scarce resources on technology to enable the institution to do something new. The re-allocation of existing resources within post-secondary institutions is not easy!
3. Another constraining force is the difficulty associated with the copyright of instructional materials. First, existing copyright law regarding the educational use of material was not designed for an online learning environment. Consequently, educators are unable to simply transpose their classroom-based practices and use their materials in the new environment. Second, intellectual property rights for materials that are developed by the various staff within the institution may not suitably cover use of those materials for online learning. Parrish and Parrish[1] suggest that one of the

first things an institution should do, when contemplating online delivery, is review their existing intellectual property policies to determine their suitability. Duke University is an example of an institution that has done this.[10]

4. There are several factors that contribute to a general reticence on the part of faculty to embrace the development of on-line learning. These include:
   - Lack of confidence in using the technologies
   - Concern about job security
   - Concern about increased workload resulting from more communication demands from students.
   - Differences of educational philosophy between those who believe learning should be structured and directed by teachers and those who support a constructivist or more learner-centred approach to learning.
   - A concern that teaching, which historically has been quite private in higher education, will become public. This idea can be threatening for faculty who feel they may not have the skills to use the technology effectively.
   - A concern that the adoption of online learning may threaten institutional autonomy if it leads to partnerships with the corporate sector and participation in large consortia of institutions.
5. Learners also have concerns about online delivery. For example:
   - Online students experience poor support services. Experience has shown that online learners cannot be adequately served through service models designed to meet the needs of campus-based students.
   - They have concerns about the quality of their learning, partly because it is different from their previous experience and that of their parents, and partly because they hear that concern from faculty members.
   - The transfer of course credits across institutional boundaries remains difficult. This limits optimal utilization of the online courses that are available.

6. The bicameral management model that is typical in higher education institutions, together with decision processes that are more transparent and participatory than those commonly used in the business world, also slow the pace of adoption of online learning models.

General Observations

The interplay of the forces described above makes the development environment for online learning extremely dynamic. As a result, any attempt to make definitive statements about the current status of online learning practice is risky. However, the following observations provide a snapshot of the practices, policies, and organizational models that are emerging to enable and support the adoption of online learning as well as a sense of the benefits, disadvantages and obstacles that attend it.

First, of all, there are many descriptors for online education that are used interchangeably and inconsistently. This creates confusion and misinformation for anyone trying to understand the concepts and practices involved. For example, the term "distance learning" is commonly used as the descriptor for online delivery of post-secondary courses because the predominant purpose has been, and largely still is, to serve off-campus learners. The terms "virtual learning," "Web-based learning, "distributed learning," and "networked learning" may also be used to describe essentially the same learning model.

A related concern over descriptors is summed up by Robin Mason of the U.K. Open University's Institute of Educational Technology. She states:

> The mystification surrounding the term "online course" arises because it is used indiscriminately to apply to nearly any course which makes even a passing use of the Internet, as well as to those where every aspect of the course is only accessible electronically."[11]

Mason argues that an online course should include the following elements:

- Asynchronous group and individual messaging
- Access to course materials
- Real-time interactive events

While the availability of courses that would meet Mason's criteria is increasing, there are very few examples of institutions that have incorporated ICT applications into course delivery and tuition as well as the related functions of administration, development/delivery of instructional material, and learner support services. The most common delivery applications are to facilitate student-to-student and student-to-teacher communications. The content that is delivered electronically is mostly text-based because of bandwidth limitations.

Nevertheless, the interest on the part of post-secondary institutions in online learning is now universal. No one doubts that it will have a significant impact. Discussion and debate is no longer solely, or even primarily, about technology. The agenda now includes issues such as:

- Quality assurance
- Faculty roles
- Provision of learner support services
- Ownership of instructional materials
- Institutional autonomy
- Cost
- The nature and purpose of the "university"

These issues constitute the new agenda of discussions about educational change and reform. Technology applications are becoming, by comparison, the easy part of the discussion.

The nature of the new agenda makes it difficult for leaders to hurry up the reform process. The way higher education institutions work requires full,

transparent discussion of the issues and collegial decision processes. The experience of trying to rush the process has been not been positive. The failure of the California Virtual University has been attributed, in part, to a lack of attention to developing faculty understanding and obtaining their input.[12] Similarly, the President of Cornell University ran into a backlash from his faculty when the Board of Regents moved to establish "E-Cornell" without what was deemed to be appropriate consultation. These experiences fuel the view that existing organizational structures are simply incapable of changing quickly enough way to enable states and nations to compete in a global educational world.[13]

Another factor, described by Christensen,[14] which profoundly influences the reaction to the introduction of new technologies, is the failure to distinguish between those technologies that are "sustaining" and those that are "disruptive." Christensen describes sustaining technologies as those that improve the performance of established products. In the case of post-secondary institutions, these are the courses and programs and the way they are currently being delivered. Disruptive technologies, on the other hand, are those that cause product performance to get worse – at least in the short run. In an educational context these would be technologies that, if adopted, would be seen as likely to lower quality, increase workloads, and/or add costs.

Experience around the world has demonstrated that the readiness with which teachers and faculty accept and incorporate new technology depends on how they perceive it will help them with their current tasks. They may, in fact, believe that the technology would be of use if it didn't draw resources away from current needs, if they would be given training, if they were convinced it would be effective pedagogically, and if it would not add to an already heavy workload. Part of the problem that institutions have in responding to these concerns is that they don't have a way of incubating disruptive technologies so that their potential benefit to the institution can be tested.[15]

The development of online education continues to be driven by its application in the context of distance education and more and more institutions are using it to deliver courses to learners away from the base campus. This situation, together with the belief that there are huge untapped international markets that can be profitably accessed via distance education, suggests that the distance education context will continue to be the venue that is most amenable to the use of online learning.

Consequently, the distance education activities of institutions are becoming mainstream. They are moving from the margin of institutional interest to the centre. The result is an inexorable process of convergence between the way education is provided on-campus and the way it is provided to learners elsewhere. In fact, it is arguable that the continued use of the term "distance education" has become dysfunctional in the sense that it fosters a perception of a dichotomy that no longer exists.

This growth of online education is fostering the development of new organizational forms, some of which are described here:

- Programs are being offered online by departments within institutions that offer most other programs in the traditional manner. This creates the phenomenon of a "virtual" institution within a conventional one.
- Organizations that were created in the first instance as single-mode distance teaching institutions are finding that they need to reinvent themselves as their once-exclusive mandate evaporates. As a result, they are leading the way in the search for global markets, developing or arranging for their students to have access to "learning centres" to enable more face-to-face interaction and developing new services such as online assessment of credentials and prior learning.
- Broker-type organizations are emerging to take advantage of the opportunity to act as "agents" for the growing number of providers of

online courses. Examples include Scottish Knowledge and the University of the Highlands and the Islands project in Scotland and the Public Broadcasting System "Going the Distance" project in the U.S.

- Service and facility provider-type organizations have emerged in response to the support needs of learners studying online. Examples include the Open Learning Network in Australia, the Maine Network for Educational Technology in the U.S., the Confederation of Open Learning Institutions of South Africa and the Open Learning Information Network in Newfoundland. A very successful commercial example of an international organization of this type is the Sylvan Calibre Learning Network.
- Institutions that do not provide instruction but are authorized to award credentials and to provide a variety of other services such as learning assessment, educational planning, and learning records are becoming part of educational systems, especially in North America. These are arising in response to the need to enable learners to take courses from a variety of online providers without confronting transfer credit problems. Examples are Regents College in New York State, the developing Western Governors University, and the Canadian Learning Bank, which is part of the Open Learning Agency of B.C.

There is also continuing emergence of private sector organizations that see opportunities in the online education market. These are of three types:

- Direct providers of instruction that are focused on niche markets. The University of Phoenix and Jones International University are successful U.S. examples. The Nation Institute of Information Technology with headquarters in India is another.
- Corporate training networks, developed in the first instance to meet internal training needs, that are now marketing their programs externally. There has been considerable speculation that these organizations would be a threat to traditional institutions, but to date, there is little evidence to

support that view. Indeed, the evidence is that these organizations are more interested in partnership arrangements that will enable them to receive formal recognition for the training they provide. Examples are Motorola University, some of the international telecoms, and Microsoft.

- Specialized service organizations that provide consultation, project management, technical support, and private tuition. These are evolving on a fee-for-service basis; examples are the McGraw-Hill Learning Infrastructure, Virtual University Enterprises, and IBM.

A more recent presence in this growing list of commercial providers of educational programs and services online is the publishing industry. An example is the partnership formed between the online arm of Barnes and Noble (barnesandnoble.com) and notHarvard.com, a company that creates online courses for businesses.[16] The courses offered will focus on non-formal general interest topics such as film, jazz, etc. and so will obviously not compete with traditional higher education. However they have co-opted the terminology of academe and they may compete with some types of programs offered through the continuing education departments of institutions.

Perhaps one of the most significant organizational developments is the emergence of consortia of post-secondary institutions. These have a somewhat different purpose and programming emphasis, but in one way or another they are all being created to take advantage of perceived international market opportunities though the use of online course delivery. Examples include the following:

- Unext.com was established with the aim of "creating an enterprise to try to transform global education using the Internet."[17] It intends to form partnerships with elite academic institutions around the world. The content will be provided by faculty in the partner institutions and the courses designed and taught by Unext and its own institution, Cardean University, which will go online July 2000. (Cardean has the authority to award

degrees and credits.) A primary focus will be on business programs. Unext already has signed deals with University of Chicago Graduate School of Business, Columbia Business School, Stanford University, Carnegie Mellon University, and the London School of Economics.

- Nine universities have joined with NextEd, an online education company in Hong Kong that produces technology for distance education, to form the Global University Alliance, which will offer graduate and professional courses online in Asia. The nine universities (more are expected to join) are Athabasca University, Auckland University of Technology, Chung Yuan Christian University in Taiwan, Hogeschool Brabant Business School in the Netherlands, the Rochester Institute of Technology, the Universities of Derby and Glamorgan in Britain, and the University of South Australia.
- The Universitas 21 is an 18-member alliance of universities spread across 10 countries in Asia, Australia, Europe, and North America. It has joined with TSL Education Ltd., a London-based subsidiary of Rupert Murdoch's News Corporation, to establish a joint venture that will begin offering programs over the Internet next year.[18] The Chairman of Universitas 21 is quoted as saying that "the old-fashioned forms of pedagogy and their adaptation to distance education from face-to-face teaching is not the way e-education will go." The member universities expect to generate income from this venture that they can spend on their campus-based operations. Two Canadian universities are involved: the University of British Columbia and the University of Toronto. Interestingly a report commissioned by the Australian government in 1998 concluded that there was no evidence that the media corporations intended to enter the education business on their own, but that they may well seek alliances with institutions that would use their delivery capacity.[19]
- The U.K. government has commissioned a business plan for a major international "e-university" that will involve a collaboration of several British universities in offering online instruction at the bachelor's degree

level as well as two-year diplomas. The initiative is to create the capacity to compete globally with the major virtual universities being developed in the U.S. and, hence, to protect the U.K.'s share of the international student market. In announcing this venture, Education Minister David Blunkett stated that the universities have no choice but to immerse themselves in Web-based and online activities.[9]

Not all consortia are made up of universities, and not all have the goal of exporting programs internationally. For example, there are several U.S. consortia that have been formed by community colleges as well as by universities at regional and state levels for the purpose of sharing courses and creating a single information source for learners.[20]

These developments, and many others, are attracting an increasing share of the overall annual investment in education. A recent article based on data from Eduventures.com, a Boston-based education-industry research firm, reported that in 1998 investment in e-education was US$198 million. In 1999 that grew to US$981 million, and in the first quarter of 2000, the figure has already reached US$640 million.[21] Obviously there are a lot of investors that share the belief that the next "killer" application of the Internet will be in education!

However there are reasons to be cautious about assuming that there are unlimited export markets for online education. The hard evidence so far is that the opportunities exist in niche content markets such as business, technology, professional education (e.g., accounting), and upgrading, rather than the content typically covered in a general arts undergraduate curriculum. It is also clear that those niche markets are crowded – and becoming more so! All this is leading to market fragmentation, even within local institutional markets, making it more difficult for institutions to subsidize low enrolment programs with revenues from those with high enrolments.

Niche markets are also defined culturally.[22] For example, some "open" institutions are thriving because they provide programs using the national or regional language. The electronic Open University of Catalonia is just one example. Therefore, it cannot be assumed that programs provided in English only will be well received. As well, the cost of programs is also deterrent. Certainly the market in the developing countries for programs at the fee levels common in the developed countries, is limited.

Further, in spite of the earlier observation that technology is the easy part of the process of increasing the use of online learning by post-secondary institutions, there are still substantive technology issues to be dealt with. There are huge disparities, regionally as well as globally, in learner access to technological infrastructure. Until those barriers are overcome, online learning will continue to bypass most of the world's potential student body.

The question of the costs and benefits of online courses delivery remains opaque. There is a paucity of reliable data on which to base any conclusion that is empirically defensible. The conventional wisdom about older distance education delivery models has been that they are cheaper. Detractors respond by arguing that they are also of lower quality. Online delivery has the promise of improving the quality of the learning experience, but at much higher cost. There is growing acceptance that the solution to the issue of cost versus quality lies in the axiom that "bigger is better." And that the way to "get bigger" is through the formation of value-added partnerships and consortia as evidenced by the initiatives previously described.

Finally, in observing the global picture of online learning development, the important role of government in the process of reform at all levels of educational systems must be recognized. The development of the Western Governors University is an example. While the accreditation of the institution

is currently delayed, its development from concept to launch exemplifies how quickly innovation can occur when there is political will. Similarly, in the U.K., the development of the Open University is attributed mostly to the vision and political will of Harold Wilson during his term as Minister of Education. A more current example in the U.K. is the initiative of the Blair government in the exploration of an "e-university" consortium.

The development of the Virtual University Trial Project in Korea also illustrates the point. This consortium of universities and private companies was initiated by the Korean government in February 1998 for the purpose of exploring ways of setting up an Internet-based virtual higher education system.

CANADIAN OVERVIEW

The forces acting on Canadian post-secondary education systems and institutions that drive or constrain the adoption of online learning are similar to those found elsewhere. Compared with the United States, Canada might fairly be accused of acting less and talking and studying more. However that isn't necessarily a weakness.

Canada, like Australia, has had to solve the problem of providing educational opportunity to a portion of its population that is thinly distributed over large geographic areas. It is not surprising, therefore, that both countries have been at the forefront of distance learning development over the years. As result, both countries have institutional models and inventories of learning materials that do not exist to same degree elsewhere.

In the Canadian context, this may be both an advantage and a disadvantage as we evolve to an online environment. It will be a disadvantage if Canada is "leapfrogged" because of a commitment to the current model, or because institutions simply use the technology to deliver learning products that already

exist – and call that "being online." It will be an advantage if institutions are able to leverage the existing content inventory into a truly online delivery mode through the creation of objects-based content databases. (For more detail, see the section "The Future" at the end of this paper.)

Highlights of Current Activity

The purpose of this paper is not to document the online delivery that is occurring in institutions across the country. Safe to say that that what is going on in Canada is as innovative as it is anywhere and that, as elsewhere, not all that is called online delivery meets the definition provided in the Introduction to this paper. The following examples illustrate the range and innovative nature of current activities:

1. Contact South is a consortium of colleges in southern Ontario that collaborate to provide courses using a combination of network conferencing along with print materials.[23]
2. The Master's of Health Administration Program at the University of Toronto's Faculty of Medicine is a good example of how online learning can be used to complement on-campus delivery.[24]
3. Simon Fraser University offers a teacher training program in collaboration with the Open Learning Agency's Open School; it is an example of using online delivery to enable learners to be self-directed in terms of assessing current competencies and selecting learning goals in light of that assessment.[25]
4. The online MBA offered by Athabasca University is not only a useful model, it is also has the largest enrolment of any program of its kind.[26]
5. College of the North Atlantic is another consortium of colleges that are collaborating to provide courses using webCT. The College supports its programs through a network of 18 centres.[27]
6. The Prior Learning Assessment online service of the Open Learning Agency illustrates how ICT can be used to provide learner services.[28]

7. Mount Allison University's Centre for Learning Technologies is an applied research, consulting and resource centre for the new media in learning for New Brunswick and the rest of Canada.[29]
8. Several sites provide a listing of courses offered by distance education methods, and they typically indicate which ones involve online delivery. The most comprehensive of these is the Telecampus, which has a particular focus on online delivery.[30]
9. Two other Web sites are required stops for anyone wanting a comprehensive picture of the state of development of online education in Canada. They are the Office of Learning Technologies of Human Resource Development Canada[31] and the Information Highway Application Branch of Industry Canada.[32] Together they provide links to every provider of courses and programs that uses ICT, in one way or another, as well as to a profile of educational resources and expertise available in the private sector. They also demonstrate the very important role being played by the federal government in facilitating the development and use of ICT in education.

Environmental Scan of Online Post-Secondary Education

It is tempting to look at what is happening elsewhere and let that become the sole frame-of-reference for what should be happening in Canada – or any other jurisdiction for that matter. Obviously it is important to know what others are doing; however, as any unrepentant strategic planner will affirm, it is equally important to consider where you want to go and what strategies you should employ to get there, from a vantage point of knowing where you are. By analyzing the strengths, weaknesses, threats, and opportunities that exist in the arena of online post-secondary education in Canada, such a discussion may be stimulated.

Strengths

First, the quality of the Canadian post-secondary education system is highly respected. Canada has an international reputation as an innovative leader in the delivery of post-secondary courses and programs using a variety of media and distribution networks. There is a base of expertise and experience in our institutions and the private sector that, in international terms, is second to none.

Further, there is a valuable asset extant in the huge inventory of content that exits in the form of distance education materials in our institutions that can be converted to online delivery formats.

Weaknesses

Of course, weaknesses also exist. The fragmentation of jurisdiction and leadership causes difficulties in formulating and implementing development strategies. With few exceptions, institutional thinking about online delivery is in terms of distance education rather than on-campus applications. Further, Canadian institutions do not have a history of collaboration on the delivery of courses and programs.

Compared to the United States, there is much less experience with business models and partnerships. The context of post-secondary education in Canada has been almost exclusively public sector, and in the global context, it is small and fragmented by provincial jurisdiction, making it relatively less attractive to private investment. Consequently, Canadian institutions do not have access to the large pools of capital investment funds that U.S. institutions do, which is needed to help establish the expensive infrastructure and support systems for online delivery.

Threats

There are three main threats identified:

- The growing presence of out-of-province and out-of country providers of post-secondary education through online delivery will cause increasing competition and fragmentation of high-demand program markets in the areas of business and technology education.
- The formation of large consortia, consisting of some of the world's most prestigious institutions, for the express purpose of delivering high demand programs online to students anywhere, may threaten the long-term future of smaller institutions that do not adopt online delivery strategies in collaboration with others.
- Institutions that do not adopt online learning, and the more open and flexible policy environment that must accompany it, invite the development of new organizations that will respond to changing needs and opportunities. The development of the Western Governors University in the United States and the recently announced "e-university" in the U.K. are examples.

Opportunities

Several opportunities exist for the development and expansion of online post-secondary education in Canada:

- There is huge potential for facilitating expansion of online delivery by developing "objects-based" content databases that are leveraged from the assets that already exist in the form of distance learning materials.
- A national virtual institution, based on this vision and focused on a defined content area, could be created with institutional and private sector partners to provide an online delivery capacity that would serve both institutions and individual learners – anywhere!
- The development of learner support services online is of global interest and is being developed at some institutions. The expansion of this is critical to the future development of online course delivery.

- The application of online learning to on-campus teaching offers a significant opportunity for expansion.

THE ISSUES OF IMPLEMENTATION

The issues involved in the development of online delivery concern learners, faculty, institutional leaders and administrators. There is also an impact on inter-institutional relationships. The issues overlap; they are not discrete. A resolution of one issue has implications for issues in other areas. Nevertheless, it is important that the view from these perspectives is understood. These differing perceptions of the benefits, disadvantages, and obstacles of online learning will result in quite different reactions to any attempts to accelerate the adoption process. Understanding them will be critical to a process of seeking collaborative solutions.

The Learners

Learners served by post-secondary institutions are very diverse. Differences of age, gender, location, family context, employment, learning goals and learning styles are some of the variables that distinguish them. As a result, the view of online learning and its usefulness may be very different across learner groups. Therefore, any effort to develop online delivery needs to begin with the questions: Who is this for? and What is their learning context?

However, all learners welcome changes that promise to provide them with easier and more flexible access to learning opportunities. Online delivery that has at least some asynchronous component can provide that. Ron Oliver of Edith Cowan University[33] describes some additional benefits:

- There is greater access to information compared to courses organized around a single text and the teacher's knowledge of the subject.
- The ability for learning to be more active as a result of increased scope for communication among learners and with the instructor.

- There is more opportunity for collaborative learning experiences.
- Well-designed online learning can facilitate learners who wish to be more self-directed.
- Online learning can be more authentic as the places of learning are expanded to include more "real world" venues and experiences.
- Learning online helps develop generic skills such as techno-literacy, information search and management, group problem solving, and project management.

However, as others have documented,[34] online learning can have its frustrations for learners. Generally, these frustrations stem from three sources:

- Problems with the technological appliances and infrastructure, which arise either because the systems malfunction or because learners are not given training or not supported with technical help.
- Minimal and untimely feedback from the instructor. While these complaints are by no means exclusive to online learning, they are exacerbated by the fact that instructor/learner communications tend to be much higher than in a conventional classroom environment.
- Ambiguous instructions on the Web site as well as via e-mail. Again, these can be problems in any situation, but when a learner is not able to get his or her procedural questions immediately resolved, the frustration level escalates.

The question of the pedagogical effectiveness of online learning is currently the subject of a great deal of discussion. The preponderance of evidence is that, at worst, learners do as well in online courses as they do in any other form of course delivery. The results from a course evaluation at York University[35] showed Internet courses yield better grades than traditional correspondence courses and achieve as good or better results as in-class lectures.

However, it also must be acknowledged that that online learning isn't for everyone. Learning styles differ, as do preferences for a learning environment. As well, the socialization process that occurs through group-based, face-to-face learning is not unimportant. Hopefully the design of online courses will incorporate these issues so that online learning will add more flexibility and enable learning to be more individualized.

The Faculty

It's trite but true that the role of the online teacher changes from the traditional "sage on the stage" to that of "guide on the side." Oliver describes the online teacher's role as having following components:

- The Coach: Helping learners become more independent in their learning activities and in their ability to search for and evaluate information.
- Learning designer: Rather than thinking only about what it is to be learned, the online teacher needs to be able to think about how it is learned. For most faculty, this is a new experience but it represents an integral part of online learning.
- Teaching for outcomes: Historically, the emphasis in post-secondary education has been on the curriculum, and quality of learning has been judged by the inputs to the learning process. That changes in online learning to an emphasis on outputs – that is, what learners will be able to do as a result of their learning. This change creates differences in the way teachers consider their subjects and their delivery methods.

Faculty members cannot be expected to adapt to these role changes without training and coaching, which is most effectively managed in a team environment where they have the opportunity to work with instructional designers and those with production expertise.

Faculty also worry about what online teaching will mean to their workload and their interactions with students. Many faculty welcome the opportunity to get involved in new teaching paradigms but find that, while it may be rejuvenating, it also results in more work. Many wonder how they will be compensated in the emerging online environment.[36]

There are two major issues related to the role of faculty in the development of learning products for online delivery:

- The ownership of materials must be determined. As the American Council of Education (ACE) points out,[1] there are several ways to define ownership that can be spread along a continuum depending on the amount of investment made in the development of the material on the part of the institution. Others vest ownership with the institution for the first three years, with reversion to the faculty member at the end of that period. Whatever the model, the institutions involved in online course development must establish a core policy on ownership of intellectual property. Duke University[10] and San Diego State University[37] are examples of institutions that have done this.
- Consideration should be given to materials as part of tenure and promotion decisions. Historically, instructional materials developed by faculty have not had much profile in these decisions; however, given the work involved and the sophistication required in design, the argument can be made that they should be viewed in the same vein as published articles.

Although perhaps difficult to acknowledge, another issue that influences the way some faculty feel about online course delivery is the fact that it makes their teaching "public." Historically, teaching in academe is done behind closed doors and is, therefore, not open to scrutiny by peers. "Going public" can, therefore, be threatening, particularly if an instructor is feeling ill-

prepared to work with the technology. Reticence doesn't necessarily translate to being a Luddite; it may only mean "I don't want to appear stupid!"

The Institutions

Institutional leaders have three basic objectives. They want their institution to be, and be known as, a provider of high-quality education; they want that education to be widely accessible to all who can benefit from it; and, they want to do these things while containing overall costs and reducing unit costs.

Several issues arise from these often-conflicting objectives. Perhaps the most challenging is how to use technology so that both program quality and access are maximized. As Ehrmann[38] points out, each evolutionary step in the use of technology in education has involved trade-offs between these two goals. He argues that by using technology in activities that simultaneously link larger numbers of learners, scholars, and resources together in a richer, more effective distributed learning environment, it is possible to increase both access and quality.

The dilemma of what technology to invest in is another major issue. Klingenstein[39] suggests that the following factors be used to evaluate technological investments:

- How important is virtual learning to the institution's role and mission? It's not for everyone; therefore, efforts to accelerate the adoption of online learning might start by helping institutions answer that question.

- What investments should be made? The list is potentially long and costly so priorities need to be established. A rule of thumb used by many institutions is to invest first in those technologies that also support the broader academic enterprise such as authentication and web/e-mail/video servers. The leading edge is always more expensive!

- Where will the funding come from? While it *may* turn out to be true that online delivery will save money, the fact is that much of the needed infrastructure is not in place at most institutions. Klingenstein states substantial savings can't be realized until there are tools available to manage interactions between faculty and students that consume less faculty time. Furthermore, it is very difficult to reallocate resources within post-secondary institutions without stopping some current activity. The decision processes in place make that unlikely.

The provision of support services to all of the institution's learners in an equitable manner is another challenge for institutions. The poor track record in providing services such as library access, counseling and financial aid has contributed to widespread view of distance learners as second-class students.

At a broader level, institutional leaders face the task of articulating an institutional vision for their stakeholders. This is more difficult in a world where students may be located anywhere, enrolled in courses from several institutions, and studying content provided by faculty from all over the world.

Finally, another set of issues is emerging around the formation of partnerships and memberships in consortia. What does the institution expect from these relationships? How will it be measured? How will appropriate partners be chosen? How will the involvement of the private sector affect the institution? These are all-important current questions for institutions, many of them addressed by Duin-Hill, Baer and Starke-Meyerring in an upcoming publication.[40]

Inter-institutional relationships

The interactions among post-secondary institutions have, until recently, been more focused on administrative issues, budgets, and their common concerns with governments than on anything to do with online learning. Inter-institutional competitiveness and the time-honoured concept of institutional autonomy served to limit discussion on matters related to program development and delivery. However, the development of online delivery capability is changing that as institutions realize they need to find ways of collaborating in order to achieve the benefits they want, or to protect themselves from the effects of global competition. This collaboration has a variety of forms and purposes:

1. Collaborative arrangements to market distance education courses have become common among community colleges. They provide the learner with "one-stop shopping" and a much broader choice of courses and learning support.
2. Some progress has been made with the issue of credit transfer among institutions, more so in the technical/vocational sector of post-secondary education because of a growing emphasis on the development of competency-based standards. Universities have much more difficulty dealing with this issue because it threatens their uniqueness. While most have developed more liberal credit transfer policies, this issue remains a major frustration from the learners' perspective and it limits the efficiencies that could be obtained from online learning. A failure to address this issue satisfactorily is one of the forces driving the emergence of new institutional forms and government-created coordinating bodies.
3. The emergence of competency-based standards is but one form of the growing focus on standards. Another is that of benchmark or "best practice" standards, which enable institutions to assess and compare the processes involved in the design and delivery of online education. A recent contribution comes from the National Education Association and

Blackboard Inc. They have published a set of 24 quality measures for online learning that have been derived from the Quality On The Line study conducted for them by the Institute for Higher Education.[41] These measures cover the following areas:

- Institutional support
- Course development
- Teaching/learning
- Course structure
- Student support
- Faculty support
- Evaluation and assessment

DEVELOPING TRENDS

Today's online applications mostly involve the application of ICT to the traditional products of post-secondary institutions (courses and programs) to make them more accessible. Undoubtedly, this trend will continue. However, developments are underway that will have a dramatic effect on the way online education occurs and that may well provide the focus for efforts designed to accelerate the process of adopting online applications.

Perhaps of greatest significance is the emergence of what is being referred to as "standards-based learning systems development." This involves the organization of content into small objects in the form of learning outcomes and associating them with learning resources, activities, and assessment strategies.[6] Once developed, these learning objects can be stored in a database using a set of standards that enable the content to be shared with any institution that uses the same standards. Items can be then re-aggregated according to the needs of any group of learners, and the material can be reproduced in print, CD-ROM, or Web-based delivery formats as appropriate.

This work is being led by the Instructional Management Systems Group, which has been established by EduCAUSE, a consortium that includes 600 institutions, technology vendors, and publishers. Some applications of the model are already underway at the Open Learning Agency of British Columbia.

This development has led to the need to produce content standards. The Merlot project, started last year by the university systems of California, Georgia, North Carolina, Oklahoma, and the national association of State Higher Education Executive Officers, is an example. It is currently focused on the content areas of biology, physics, teacher education, and business. It is said to be the only project that is attempting to evaluate the quality of learning objects. The project reviews Web sites in terms of content quality, the potential effectiveness as a teaching/learning tool, and ease of use. Membership in the project is being added and it is not much of a stretch to imagine it becoming a form of quality assurance rating mechanism for online learning somewhat analogous to ISO 9000.

Elsewhere, new organizational forms are developing in response to some of the constraints posed by the traditional processes of institutions. The "unbundling" effect of the applications of ICT enable these organizations to focus on particular functions such as the development of learning materials, credit banking, learner support services, and even the awarding of degrees and diplomas.

The phenomenal global growth of learning centres, often called tele-centres, will expand the venues for online delivery. These centres provide learners with a number of essential services such as access to the ICT appliances, network connectivity, and various administrative services as well as a place to meet other learners on a face-to-face basis. The development of these centres

in communities and the workplace is a critical factor in the expansion of online education.

EPILOGUE

It is important not to lose sight of the fact that technology is only a tool to help educators improve access and quality in ways that are affordable. The picture that emerges from this overview of online development is that of a continuum. At one end we see technology assisting the teacher in the classroom. At the other we see the teacher facilitating learning that is primarily delivered online to learners anywhere. This picture leads to several assumptions. One is that faculty jobs will not disappear as a result of the adoption of online education, but their role will change. Another is that face-to-face learning will not disappear, but neither will it be essential to the creation of a "learning community." The traditional campus will not disappear, but it will have virtual formats and be augmented by centres of learning in convenient locations.

Change is always a function of the relative strength of forces trying to modify the status quo and those trying to maintain it. The evidence from this overview suggests that simply adding more pressures for change, without recognizing and reducing the opposing forces, increases the tension in educational systems and is seldom effective.

ENDNOTES

1. Parrish, Debra M. Esq. and Alexander Wills Parrish. *Developing a Distance Education Policy for 21st Century Learning.* Division of Government Public Affairs, American Council for Education. March 2000. p.1.

2. Tapsall, S. and Yoni Ryan. "Virtual Education Institutions in Australia: Between the Idea and Reality" in Farrell, Glen M., ed. *The Development of Virtual Education: A Global Perspective.* Vancouver: The Commonwealth of Learning, 1999.
3. Dirr, Peter. "Distance and Virtual Learning in the United States" in Farrell, Glen M., ed. *The Development of Virtual Education: A Global Perspective.* Vancouver: The Commonwealth of Learning, 1999.
4. Erhmann, Stephen C. *Ivory Tower, Silicon Basement: Transforming the College* [online]. Washington D.C.: The Learning Technologies Group, 2000. < www.tltgroup.org/resources/rivory.html>
5. Westerbeck, Tim. [Interview for the Corporate Education Herald. Online.] < www.academyonline.com/corped/index.htm>
6. Porter, David. *Learning in a Wired World: Moving Beyond the Course as the Unit of Learning.* Vancouver: Product Development and Research Group, Open Learning Agency, 2000.
7. Farrell, Glen M., ed. *The Development of Virtual Education: A Global Perspective.* Vancouver: The Commonwealth of Learning, 1999.
8. Twigg, C.A. and D.G. Oblinger. "The Virtual University." *A Report to the Joint Educom/IBM Roundtable.* Washington, D.C.: 1997.
9. Walker, David. "Britain Plans a Major E-University, With Goal of Competing Globally." *Chronicle of Higher Education.* May 19, 2000.
10. Carnevale, Dan. "Duke U. Sets Rules for Online Course Ownership and Conflicts of Interest." *Chronicle of Higher Education.* May 19, 2000.
11. Mason, Robin. "Models of Online Courses". *ALN Magazine.* Vol.2, Issue 2. (October,1998) Also available at <www.alnweb/magazine/vol2/masonfinal.htm>
12. Young, Jeffery R. "Veteran of California Virtual U. Blames a Flawed Business Plan for Its Demise." *Chronicle of Higher Education.* May 12, 2000.
13. Bjarnason, S. et al. "Summary Report." *The Business of Borderless Education: U.K. Perspectives.* The Committee of Vice Chancellors and

Principals of the Universities (CVCP) and the Higher Education Funding Council for England, 2000.

14. Christensen, C. M. *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail.* Boston: Harvard Business School Press, 1997.
15. Archer, W., D.R. Garrison and Terry Anderson. "Adopting Disruptive Technologies in Traditional Universities: Continuing Education as an Incubator for Innovation." *Canadian Journal of Continuing Education.* 25(1), 1999. pp. 13-30.
16. Carr, S. "Online 'Universities' Created for Companies Use Education to Lure Customers." *Chronicle of Higher Education.* June 2, 2000.
17. Anderson, L. "Distance Learning: Diversity drives market's development" [online]. <www.ft.com/ftsurveys/spad22.htm.>
18. Maslen, G. "Rupert Murdoch's Company Joins With 18 Universities in Distance Education Venture." *The Chronicle of Higher Education.* May 26, 2000.
19. Cunningham, Stuart et al. *New Media and Borderless Education: A Review of the Convergence Between Global Media Networks and Higher Education provision.* Canberra: Commonwealth of Australia, 1998.
20. "Virtual Universities: An Overview." *Chronicle of Higher Education.* May 12, 2000.
21. Jone, Roland. "Online Learning Excels: Web-Based Education Poised to Grow." *TheStreet, ABCNEWS.COM,* June 5, 2000 [online]. <www.abcnews.go.com/sections/business/>
22. O'Shea, Tim. "Crucial Choices Must Be Made About E-universities' Methods and Content to Ensure Success." *The Guardian Weekly.* April 5, 2000.
23. <www.contactsouth.org>
24. <www.utoronto.ca/htlhadmn/mhsc.htm>
25. <www.openschool.bc.ca>
26. <www.uathabasca.ca>
27. <http://dls.nothatlantic.nf.ca/main.asp>

28. <www.ola.bc.ca/pla/home.html>

29. <www.mta.ca/clt>

30. <http://courses.telecampus.edu>

31. Office of Learning Technologies at <http://olt-bta.hrdc.gc.ca>

32. Information Highway Applications Branch at <www.schoolnet.ca>

33. Oliver, Ron. *On-line Teaching and Learning: New Roles for Participants* [online]. <www.monash.edu.au/groups/flt/1999/online.html>

34. Hara, N., Rob Kling. "Students' Frustrations with a Web-based Distance Education Course: A Taboo Topic in the Discourse." *First Monday*, December 4, 1999 [online]. <www.firstmonday.dk/issue4_12/hara/index.html#author>

35. "Grades as Good As In-Class Courses, Higher Than Correspondence" [online]. York University Centre for Study of Computers in Education, July 9, 1999. <www.yorku.ca/admin/comm/release/archive/070999.htm>

36. Weiner, Rebecca S. "Instructors say Online courses Involve More Work at Same Pay" [online]. *The Education Column, The New York Times on the Web.* June 21, 2000. <www.nytimes.com/library/tech/00/06/cyber/education/21education.html >

37. San Diego State *University Academic Policy and Planning Committee Distance Education Policy*" [online]. April, 2000. <www.rohan.sdsu.edu/dept/senate/sedoc/distanceed.apr2000.html>

38. Ehrmann, Stephen C. "Access and/or Quality? Redefining Choices in the Third Revolution." *The Educom Review.* September, 1999.

39. Klingenstein, Kenneth J. *The Technical Realities of Virtual Learning: An Overview for the Non-Technologist* [online]. <www.educause.edu/ir/library/html/cem9815.htm>

40. Duin-Hill, Ann, L. Baer and Doreen Starke-Meyerring. *Partnering in the Learning Marketspace.* San Francisco: Jossey-Bass, 2001.

41. The Institute for Higher Education Policy. *Quality On the Line: Benchmarks For Success In Internet-based Education* [online]. National

Education Association and Blackboard Inc., April 2000.
<www.ihep.com/PR17.html>